

*On the Luminosity of the Glow-worm (Lampyris splendidula).*

By M. WILHELM KAISER.

On June 26, 1884, I captured a particularly fine female specimen, 13 millim. long, of *Lampyris splendidula*, Linn. For the purpose of preparation I stupefied it with ether, cut off its head, opened the abdomen, pressed out several hundred eggs, and finally prepared the luminous organ by cutting out the luminiferous papillæ, together with the chitinous substratum and a portion of the ventral chain. The organ had previously shown no luminosity; but when I spread it out upon an object-slide furnished with a caoutchouc ring, and, in applying the glass cover, brought it somewhat into the shade, I observed that first one, then a second, and, lastly, the third and fourth luminiferous papillæ shone with a green light. I now applied two wires from a powerful galvanic battery to that part of the preparation where I believed there were still remains of nerves, but without thereby causing any alteration in the intensity of the light. I then closed the preparation by applying Canada balsam to the edges of the caoutchouc ring and fixing on a glass cover. After this closure the organ continued shining for a quarter of an hour. A quarter of an hour later I warmed the preparation to about 50° C. (=112° F.), and then the luminosity gradually became fainter, passing finally into a yellow flicker like that of touch-wood, and then ceasing. I now opened the balsam closure again and moistened the preparation with a drop of water. The luminous organ then, in about five minutes, showed a faint green luminosity, and it is still shining, an hour after the dissection, with a dull green light.

I communicate this, as the current opinion, to be found even in the best works, is that with the death of the animal the luminosity ceases. This supposed fact, however, seems to sink into a mere supposition in presence of my observation, unless the luminous organ as such carries on an independent life for an hour after the death of the animal, and during this continues to shine, whilst the animal, when alive, has it in its power to shine or not. However, I leave it to experienced naturalists to repeat my experiment and to test its relevancy to the question whether it is the decomposition of a substance in the luminous organ or the so-called "transparent" cells in that organ that produce the light, or what other forces may come into play. I will only remark further that the luminosity of animals, like other cases of mimicry, seems to serve for protection, in order to deter other animals from devouring them at night; thus, if one seizes a non-luminous female glow-worm with a pair of forceps, it immediately begins to shine, as also when it is roughly dropped upon the ground.—*Anzeiger der k. Akad. der Wiss. in Wien*, July 3, 1884, p. 133.